GENERAL INFORMATION

Purpose

The purpose of this report is to document the results of a Comprehensive Ground Water Monitoring Evaluation (CME) at LH, Inc. A CME is an indepth evaluation of the adequacy of a facility's ground water monitoring program. A CME is an indepth evaluation of a facility's ground water monitoring program, designed to determine the adequacy of the facility's program and to determine compliance with regulations 3745-65-90 through 94 of the Ohio Administrative Code. A field inspection was conducted on October 25, 1990 at the abandoned L.H. facility as part of the evaluation process. Michael Eggert and Barb Lubberger, with the Division of Ground Water, and Donna Goodman with the Division of Solid and Hazardous Waste Management, Southeast District Office, were present at the time of the inspection. This CME report will evaluate a ground water monitoring compliance period from March 14, 1988 to October 25, 1990.

Information Sources

This CME was based upon a record review and the inspection conducted on October 25, 1990. In addition to the Ohio EPA files and information, the following documents provided information upon which the report was based.

1. Closure Plan, L.H., Inc.; Cambridge, Ohio Facility, January 25, 1984.
2. Sampling and Analysis Plan - Cambridge Site, LTV Steel Company, February 1986, Burgess & Niple, Limited.
3. Comprehensive Ground Water Monitoring Evaluation of NCR, Inc., Cambridge, Ohio, Division of Ground Water, Ohio EPA, 1988.
4. USEPA 440/1-E2/024 - Development Document for Effluent Limitations Guidelines and Standards for Iron and Steel Manufacturing Volume 1, Table V-2.

Inspection Checklists

Attached to this document are several checklists from the Interim Status Ground Water Monitoring Program Evaluation (SW-954). The checklists deemed appropriate for this facility are:

APPENDIX A: Comprehensive ground water monitoring evaluation worksheet.

APPENDIX A-1: Facility inspection form for compliance with interim status standards covering ground water monitoring.

SITE HISTORY AND OPERATIONS

Facility Location

L.H., Inc. is an abandoned spent pickle liquor treatment facility which operated at 1502 Beckett Avenue in Cambridge, Ohio. The facility is located in a residential/industrial area of the southern portion of the City of Cambridge. Figures 1 and 2 indicate the generalized location of the facility.

Facility Operations and History

During the short operating life (4 months) of L.H., Inc., the facility transported and treated spent pickle liquor from a steel producer. The wastes were reportedly neutralized with lime and discharged into the City of Cambridge sewer system. The treatment procedure was conducted in three lined (25' diameter) surface impoundments, approximately 5-8 feet deep. Lagoon No. 1 was used for initial treatment while lagoon Nos. 2 and 3 served as settling basins prior to discharge into the sewer system. A general schematic diagram of the facility operation is presented in Figure 3.

L.H., Inc. operated the treatment facility from June 1980 to September 1980 and hauled waste pickle liquor from Republic (now LTV) Steel plants in Canton and Massillon, Ohio. L.H., Inc. was ordered by Ohio EPA to close operations in October 1980 and file a RCRA Part A application. No further waste pickle liquor was accepted at the site after October 1, 1980. A RCRA Part A application was submitted in November 1981, but there is no record of receiving the application fee of $1,500.00. Therefore the submittal is considered invalid.

On May 14, 1982, L.H. Inc. was permanently enjoined by a consent decree from operating the treatment lagoons. As a condition of the settlement, L.H., Inc. was required to submit a site closure plan to the U.S. Environmental Protection Agency (U.S. EPA) and the Ohio Environmental Protection Agency (Ohio EPA) and to close the site in accordance with the approved plan. L.H., Inc. submitted a closure plan on January 25, 1984 and an amended plan on May 11, 1984. The plan was approved by the U.S. EPA on July 30, 1984 and the Ohio EPA on September 24, 1984. The approved closure plan called for the removal of all liquid, sludge, liners and contaminated soil. On December 26, 1984, L.H., Inc. stated its intent to drain water from settling lagoons Nos. 2 and 3 to the municipal sanitary sewer (as approved in the closure plan) beginning in January 1985. Before the site could be completely closed, L.H., Inc. apparently declared bankruptcy in early 1985 and ceased all closure procedures.

As sole source generator of the waste treated at the L.H., Inc. facility, LTV Steel assumed financial responsibility and contracted with Burgess & Niple, Limited (B&N) to adequately characterize the waste at the site. A sampling and analysis plan was developed by B&N to evaluate closure options and was submitted to LTV Steel in February 1986.

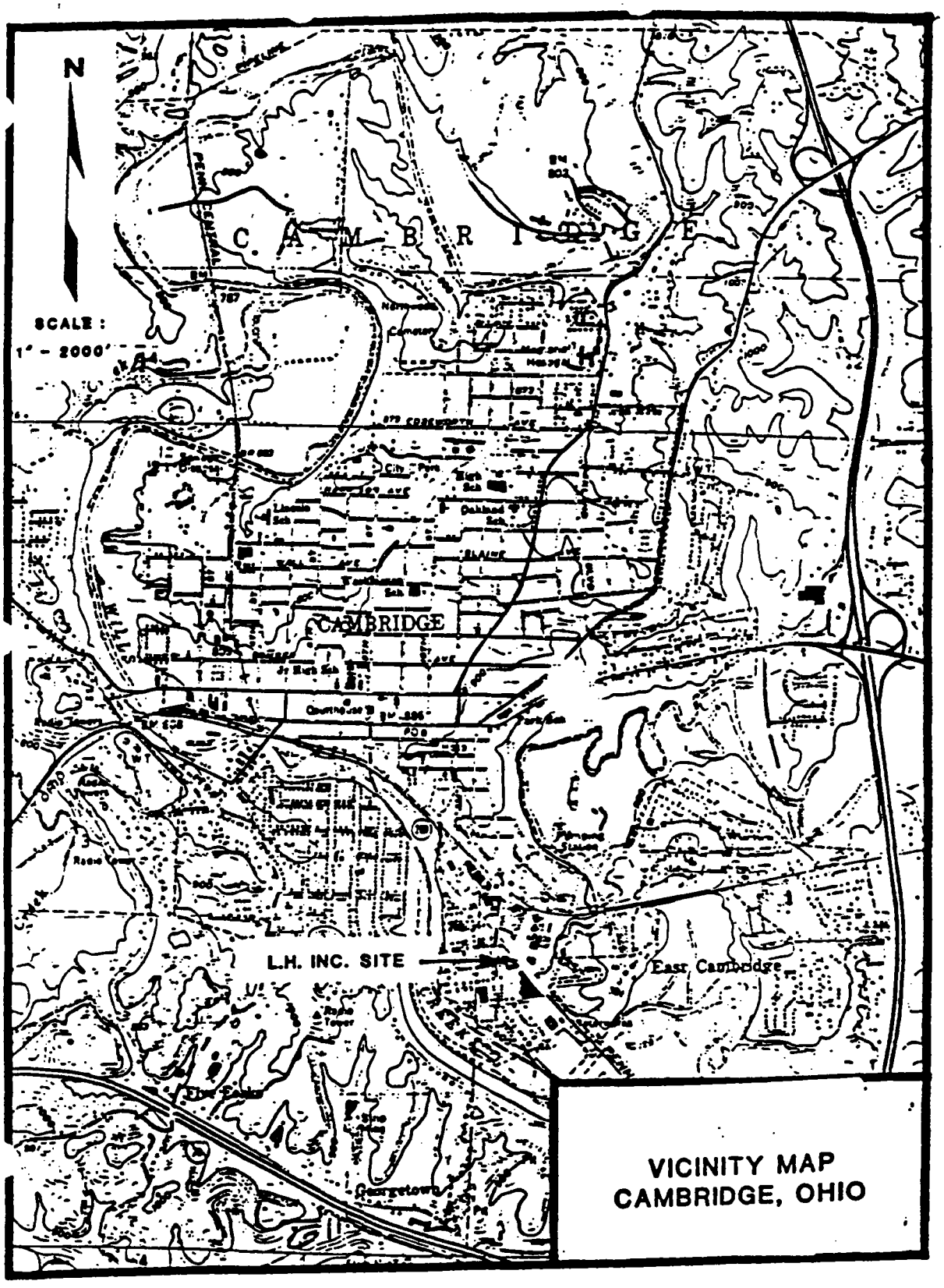

FIGURE 1. VICINITY MAP OF CAMBRIDGE, OHIO

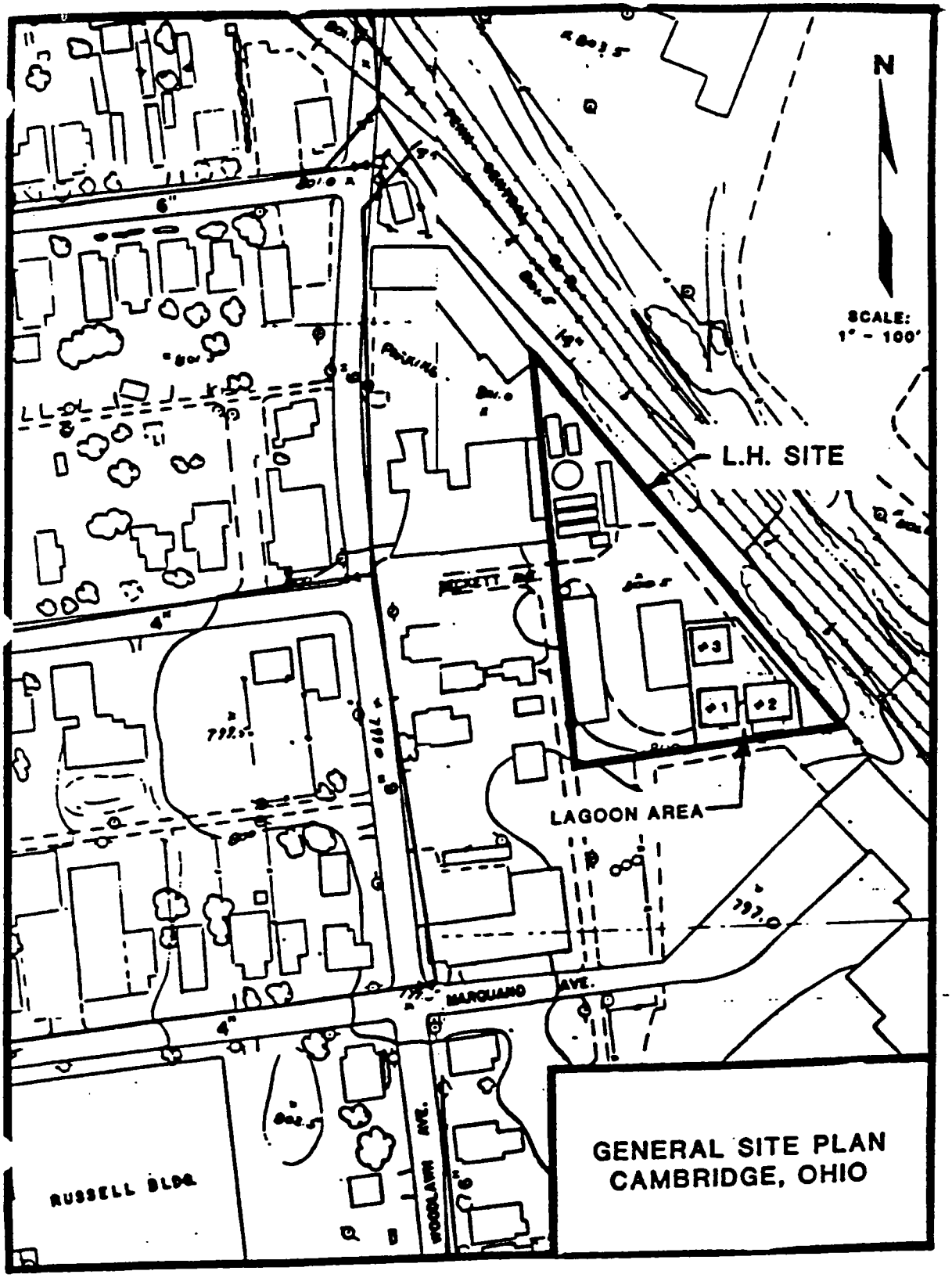

FIGURE 2. GENERAL SITE PLAN, CAMBRIDGE, OHIO

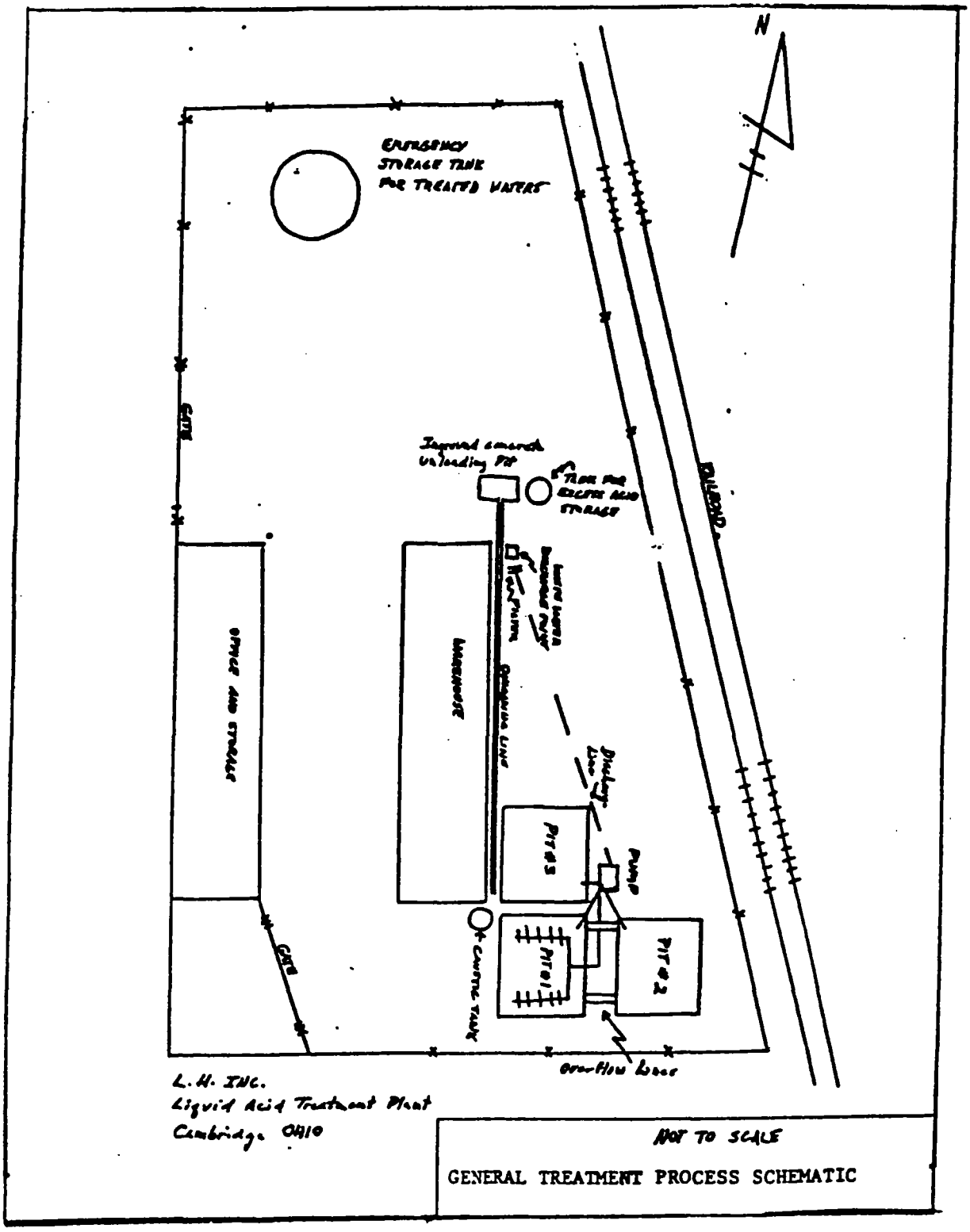

FIGURE 3. GENERAL TREATMENT PROCESS SCHEMATIC

On July 17, 1986, LTV Steel Company filed for Chapter 11 of the Bankruptcy Code. At the time of the Chapter 11 filing, B&N had the sampling and analysis plan completed, and LTV Steel had received a draft report of the results.

Sometime after L.H., Inc. had declared bankruptcy, the site was sold at a Sheriff's sale to Mr. Phillip Rich, who owns neighboring property (Sunstone Pottery). During a recent Ohio EPA inspection, September 18, 1987, it was learned that Sunstone Pottery had closed down its operation.

Wastes Handled and Processed

L.H., Inc. transported and treated spent pickle liquor which is a listed waste (K062) typically containing the following hazardous constituents: antimony, arsenic, cadmium, chromium, copper, lead, nickel, silver, zinc, dissolved iron, fluoride, oil and grease, pH and total suspended solids.

A general schematic diagram of the treatment process is shown on Figure 3. In 1983, L.H., Inc. contracted with Coshocton Environmental Testing, Inc. to sample and analyze the liquid contents of each of the three lagoons. This was completed to determine whether the remaining liquid could be discharged into the City of Cambridge sanitary sewer system. Ohio EPA concluded that the supernatent in Lagoon No. 1 contained elevated levels of constituents and must be disposed of at an approved hazardous waste treatment facility. The remaining liquid in lagoons No. 2 and No. 3 could be discharged into the sewer system. The results of the chemical analysis are presented in Table 1. It is unknown to the author whether any liquid from the lagoons was disposed of by the approved techniques.

B&N sampled the supernatent and sludge from all three lagoons on May 14, 1986. The results are presented on Tables 2 and 3. In general, it appears that constituent levels of the liquid samples have decreased in the lagoons since the 1983 sampling analysis. However, when the analysis of digested sediment samples are examined, and compared over time, elevated concentrations of chromium, iron, lead and nickel appear in all three lagoons, indicating the deposition of the liquid constituents to the sludge material.

Regulatory History

Since the last CME inspection on March 14, 1988, the Ohio Environmental Protection Agency, Southeast District Office, Division of Solid and Hazardous Waste Management has conducted three RCRA Compliance Inspections. These were conducted in November 1988, July 1989 and September 1990. During all three inspections, violations of the Ground Water Monitoring and Reporting regulations, OAC 3745-65-90 through 94, were noted.

The abandoned L.H. facility has been referred to both USEPA and the Attorney General's Office so appropriate enforcement action can accelerate the proper closing of the facility. The last legal action on record with the Ohio EPA was initiated on November 30, 1987 by the Attorney General's Office, which was to file a Proof-of-Claim of bankruptcy against LTV Steel. Enforcement efforts to date have been limited to Ohio EPA because all correspondence sent to LTV Steel is refused and returned.

TEST REPORT

Coshocton Environmental Testing, Inc.
P.O. Box 723, Coshocton, Ohio 43812
(614) 622-3328

REPORT NO. - 720-3404 DATE - February 10, 1983

TO: Mr. Lewis M. Tingle
Guernsey Savings & Loan Building
845 Wheeling Avenue
Cambridge, Ohio 43725

SAMPLE DESCRIPTION: Analysis on Lagoons #1, #2, #3 - Dated 1/26/83.

METHOD: APHA Std. Method, 14th Ed.

RESULTS: In mg/l.

	Lagoon #1 #90102	Lagoon #2 #90103	Lagoon #3 #90104
Arsenic	.120	.260	.350
Barium	< 0.1	< 0.1	< 0.1
Cadmium	.001	.004	.003
Chromium T.	7.38	.150	1.10
Chromium Hexa.	.67	.04	<.01
Lead	.032	.036	.450
Selenium	.014	.031	.056
Silver	.005	.015	.005
Mercury	.011	.012	.010

E. Christopher Bruckerieck
COSHOCTON ENVIRONMENTAL TESTING, INC.

Ohio EPA Certification 852, Bacteriological Testing
Ohio EPA Certification 4116, Chemical Testing - Drinking Water

TABLE 1. ANALYTICAL RESULTS OF LIQUID SAMPLES COLLECTED AT L.H., INC. BY COSHOCTON ENVIRONMENTAL TESTING, INC. IN 1983

Laboratory Analysis of Liquid Samples
Collected May 14, 1986
L.H. Site
Cambridge, Ohio

Parameter	Lagoon 1	Lagoon 2	Lagoon 3
Arsenic, mg/l	0.350	0.210	0.210
Barium, mg/l	0.076	0.034	0.023
BOD, mg/l	<12	<12	<12
Cadmium, mg/l	0.022	0.009	0.007
Chromium, mg/l	<0.050	<0.050	<0.050
Lead, mg/l	0.060	0.009	0.007
Mercury, mg/l	<0.0002	<0.0002	<0.0002
Nickel, mg/l	0.079	<0.040	<0.040
pH, S.U.	8.5	10.0	10.0
Selenium, mg/l	1.700	3.400	3.000
Silver, mg/l	0.040	0.016	<0.010
Specific conductivity, umhos[1]	>10,000	4,600	3,800
Suspended solids, mg/l	7.0	7.0	0.5
Zinc, mg/l	0.053	<0.005	<0.005

[1]Field measurement. The range of the field meter is 0 to 10,000 umhos. The sample from lagoon 1 was off scale.

TABLE 2. ANALYTICAL RESULTS OF LIQUID SAMPLES COLLECTED AT L.H., INC. BY BURGESS & NIPLE, LTD. IN 1986

Laboratory Analysis of Sludge Samples
Collected on May 14, 1986*
L.H. Site
Cambridge, Ohio

Sample Identification and Parameter	Lagoon 1	Lagoon 2	Lagoon 3
As Received Sample:			
Cyanide, mg/kg	0.56	0.58	0.56
pH, S.U.	8.2	10.5	10.6
Phenols, mg/kg	<0.1	<0.1	<0.1
Digested Sample:			
Cadmium, mg/kg	0.520	0.710	0.810
Chromium, mg/kg	1,600	1,200	1,100
Iron, mg/kg	10,000	4,500	6,000
Lead, mg/kg	7.3	10.0	90
Nickel, mg/kg	1,000	1,100	460
EP Toxicity Leachate:			
Arsenic, mg/l	0.033	0.027	0.021
Barium, mg/l	0.140	0.210	0.290
Cadmium, mg/l	0.022	0.013	0.015
Chromium, mg/l	3.900	3.700	0.290
Lead, mg/l	0.008	0.009	0.013
Mercury, mg/l	<0.0002	.0002	<0.0002
Nickel, mg/l	37	26	1.900
Selenium, mg/l	0.220	0.051	0.066
Silver, mg/l	0.014	<0.010	<0.010
ASTM Leachate:			
Cyanide, mg/l	<0.1	<0.1	0.19
Fluoride, mg/l	7.9	32.4	8.53

*All mg/kg results are reported on a wet weight basis.

TABLE 3. ANALYTICAL RESULTS OF SLUDGE SAMPLES COLLECTED AT L.H., INC. BY BURGESS & NIPLE, LTD. IN 1986

In the past Ohio EPA's SEDO Division of Solid and Hazardous Waste Management has suggested the following options to achieve proper site clean-up.

1. Request an emergency removal of the materials in the impoundments from USEPA.

2. Contact the owner of the property and request appropriate clean-up procedures implemented.

3. File a bankruptcy claim against LTV for the clean-up of the site.

REGIONAL AND SITE HYDROGEOLOGY

The information presented in this section was obtained from a Comprehensive Ground Water Monitoring Evaluation for NCR, Inc., Guernsey County, 1987 and Maps of the Upper (P-18) and Lower (P-17) Wills Creek Basin showing Availability of Ground Water, Ohio Department of Natural Resources, Division of Water, 1962.

Regional Setting. Guernsey County is located in the unglaciated Allegheny Plateau physiographic province. The geology of Guernsey County consists of silt loam soils derived from the parent bedrock and recent alluvium overlying Pennsylvanian Age rock approximately 650 feet thick that outcrops in the county. The Pennsylvanian Age outcrops range stratigraphically from the Allegheny Group, exposed only in the valleys of Wills Creek and its tributaries, to the Monongahela Group predominantly confined to the higher hills in the easternmost part of the county. The soil materials above the bedrock have been reported to be as much as 90 feet thick in places. The present valley of Wills Creek is reported to be filled with at least 50 feet of alluvial material, largely clays and silt with a few sand lenses.

Local Hydrogeology. L.H., Inc. is located less than one half mile north of the confluence of Wills Creek and Leatherwood Creek. According to the ODNR Underground Water Resource Maps of the area, two generalized formations with a potential to produce a domestic well yield are represented in the local area. The information presented on the map is generalized and not intended to replace site specific exploratory investigations.

The maps indicate that the local area surrounding L.H., Inc. borders on two generalized ground water resource formations. The first formation is a sandstone and shale bedrock formation which has the potential to yield small amounts for domestic supplies, usually less than three gallons per minute. Cistern and spring supplies are common. Shallow fill in stream valleys may supply limited quantities of water to large-diameter dug wells. Salt water may be encountered at depths greater than 125 feet. The second formation is a valley fill which generally follows the existing stream beds. The deposit is capable of yielding 5 to 10 gallons per minute, and in rare instances 10 gallons per minute or more. The domestic supplies are available from thin, permeable sand layers in the shallow valley fill deposits. Valley fill is generally not a water source utilized for drilled wells.

GROUND WATER COMPLIANCE STATUS SUMMARY

On October 25, 1990, a Comprehensive Ground Water Monitoring Evaluation inspection of the abandoned L.H. facility was conducted in order to determine the compliance with the ground water monitoring rules 3745-65-90 through 3745-65-94 of the Ohio Administrative Code. A ground water monitoring system does not exist at the abandoned L.H. facility. L.H. Incorporated is in violation of all ground water monitoring rules as specified in 3745-65-90 through 3745-65-94 of the Ohio Administrative Code.

APPENDIX A

COMPREHENSIVE GROUND WATER MONITORING EVALUATION WORKSHEET

APPENDIX A

COMPREHENSIVE GROUND-WATER MONITORING EVALUATION WORKSHEET

The following worksheets have been designed to assist the enforcement officer/ technical reviewer in evaluating theground-water monitoring system an owner/operator uses to collect and analyze samples of ground water. The focus of the worksheets is technical adequacy as it relates to obtaining and analyzing representative samples of ground water. The basis of the worksheets is the final RCRA Ground Water Monitoring Technical Enforcement Guidance Document which describes in detail the aspects of ground-water monitoring which EPA deems essential to meet the goals of RCRA. Appendix A is not a regulatory checklist. Specific technical deficiencies in the monitoring system can, however, be related to the regulations as illustrated in Figure 4.3 taken from the RCRA Ground-Water Monitoring Compliance Order Guide (COG) (included at the end of the appendix). The enforcement officer, in developing an enforcement order, should relate the technical assessment from the worksheets to the regulations using Figure 4.3 from the COG as a guide.

Comprehensive Ground-Water Monitoring Evaluation	Y/N
I. Office Evaluation Technical Evaluation of the Design of the Ground-Water Monitoring System	
A. Review of Relevant Documents	
1. What documents were obtained prior to conducting the inspection:	
a. RCRA Part A permit application?	N
b. RCRA Part B permit application?	N
c. Correspondence between the owner/operator and appropriate agencies or citizen's groups?	Y
d. Previously conducted facility inspection reports?	Y
e. Facility's contractor reports?	N
f. Regional hydrogeologic, geologic, or soil reports?	Y^1
g. The facility's Sampling and Analysis Plan?	Y^2
h. Ground-water Assessment Program Outline (or Plan, if the facility is in assessment monitoring)?	N
i. Other (specify) _____ 1 Ground Water Resources Map 2 Designed for waste characterization only	

Appendix A is not applicable because L.H., Incorporated has no ground water monitoring system in place at present.

APPENDIX A-1

FACILITY INSPECTION FORM FOR COMPLIANCE WITH INTERIM STATUS STANDARDS COVERING GROUND-WATER MONITORING

Company Name: L.H., Incorporated : EPA I.D.Number: OHD980615728

Company Address: 1502 Beckett Ave. : Inspector's Name: Michael Eggert/DGW
Barb Lubberger/DGW
Donna Goodman/DSHWM-SE

Cambridge, Ohio

Company Contact/Official: Phillip Rich : Branch/Organization: _____

Title: Property Owner : Date of Inspection: October 25, 1990

	Yes	No	Unknown	Comments
Type of facility:(check appropriately)				
a) surface impoundment	X			
b) landfill		X		
c) land treatment facility		X		
d) storage facility		X		
Ground Water Monitoring Plan				
1. Has a ground water monitoring plan been submitted to the Regional Administrator for facilities containing a surface impoundment, landfill, land treatment process, or storage facility?		X		No Ground Water Momtori: Program
2. Was the ground water monitoring plan reviewed prior to site visit? If "No", explain.				
a) Was the ground water plan reviewed at the facility prior to actual site inspection? If "No", explain.		X		

	Yes	No	Unknown	Comments
3. Has a ground water monitoring program (capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility) been implemented? 3745-65-90(A)	___	X	___	___
4. Has at least one monitoring well been installed in the uppermost aquifer hydraulically upgradient from the limit of the waste management area? 3745-65-91(A)(1)				
a) Are sufficient ground water samples from the uppermost aquifer, representative of background ground water quality and not affected by the facility, ensured by proper well				
1) Number(s)?	___	X		
2) Location?	___	X		
3) Depth?	___	X		
5. Have at least three monitoring wells been installed hydraulically downgradient at the limit of the waste handling or management area? 3745-65-91(A)(2)	___	X	___	___
6. Have the locations of the waste handling, storage, or disposal areas been verified to conform with information in the ground water plan?	___	X	___	___
7. Do the numbers, locations, and depths of the ground water monitoring wells agree with the data in the ground water monitoring system program? If "No", explain discrepancies.	___	X	___	___
8. Have all monitoring wells been cased in a manner that:				
a) maintains the integrity of the bore hole;	___	X	___	___
b) is screened and packed to enable sample collection at depths where appropriate aquifer flow exists?	___	X	___	___
c) prevents contamination of samples and ground water by sealing the annular space above the sampling depth with a suitable material? 3745-65-91(C)	___	X	___	___

	Yes	No	Unknown	Comments
9. Has a ground water sampling and analysis plan been developed? 3745-65-92(A)	—	X	—	Not for groun wate
a) Has it been followed?	—	X	—	—
b) Is the plan kept at the facility?	—	X	—	—
c) Does the plan include procedures and techniques for:				
1) Measuring ground water elevations	—	X	—	—
2) Detection of immiscible layers, where applicable;	—	X	—	—
3) Collecting ground water samples including:				
a) Well evacuation;	—	X	—	—
b) Sample withdrawal;	—	X	—	—
c) Sample equipment;	—	X	—	—
d) Sample containers and handling; and	—	X	—	—
e) Sample preservation;	—	X	—	—
4) Performing field analysis, including:				
a) Procedures and forms for recording raw data and the exact location, time, and facility specific considerations associated with the data acquisitions;	—	X	—	—
b) Calibration of field instruments; and	—	X	—	—
c) Procedures for sample filtration;	—	X	—	—
5) Decontamination of equipment;	—	X	—	
6) Disposal of purge water;	—	X	—	—
7) Ground water sample analysis of all applicable constituents associated with the facility including:				
a) Constituents;	—	X	—	—

	Yes	No	Unknown	Comments
b) Analytical method and detection limit; and	___	X	___	___
c) Sample holding time;	___	X	___	___
8) Quality assurance/quality control:				
a) Samples for field/lab/equipment blanks;	___	X	___	___
b) Duplicate samples; and	___	X	___	
c) Potential interferences; and	___	X	___	___
9) Chain of custody procedures:				
a) Standardized field tracking reporting forms to establish sample custody for the field prior to and during shipping; and	___	X	___	___
b) sample labels containing all information necessary for effective sample tracking.	___	X	___	___
10. Are the required parameters in ground water samples planned to be tested quarterly for the first year? 3745-65-92(B) and (C)(1)	___	X	___	___
a) Are the ground water samples analyzed for the following:				
1) Parameters characterizing the suitability of the ground water as a drinking supply? 3745-65-92 B(1)	___	X	___	___
2) Parameters establishing ground water quality? 3745-65-92 B(2)	___	X	___	___
3) Parameters used as indicators of ground water contamination? 3745-65-92 B(3)	___	X	___	___
a) Are at least four replicate measurements obtained for each sample? 3745-65-92 (C)(2)	___	X	___	___

	Yes	No	Unknown	Comments
b) Are provisions made to calculate the initial background arithmetic mean and variance of the respective parameter concentrations or values obtained from well(s) during the first year? 3745-65-92(C)(2)	___	X	___	___
b) For facilities which have complied with first year ground water sampling and analysis requirements:				
1) Have samples been obtained and analyzed for the indicators of ground water contamination at least annually? 3745-65-92(D)(1)	___	X	___	___
2) Have samples been obtained and analyzed for the indicators of ground water contamination at least semi-annually? 3745-65-92(D)(2)	___	X	___	___
c) Were ground water surface elevations determined at each monitoring well each time a sample was taken? 3745-65-92(E)	___	X	___	___
d) Were the ground water surface elevations evaluated to determine whether the monitoring wells are properly placed? 3745-65-93(F)	___	X	___	___
e) If it was determined that modification of the number, location or depth of monitoring wells was necessary, was the system brought into compliance with 3745-65-91(A)? 3745-65-93(F)	___	X	___	___
11. Has an outline of a ground water quality assessment program been prepared? 3745-65-93(A)	___	X	___	___
a) Does it describe a program capable of determining:				
1) Whether hazardous waste or hazardous waste constituents have entered the ground water?	___	X	___	___

	Yes	No	Unknown	Comments
2) The rate and extent of migration of hazardous waste or hazardous waste constituents?	___	X	___	___
3) Concentrations of hazardous waste or hazardous waste constituents in ground water?	___	X	___	___
b) Have at least four replicate measurements of each indicator parameter been obtained for samples taken for each well? 3745-65-93(B)	___	X	___	___
1) Were the results compared with the initial background mean?	___	X	___	___
a) Was each well considered individually?	___	X	___	___
b) Was the Student's t-test used (at the 0.01 level of significance)?	___	X	___	___
2) Was a significant increase (or pH decrease) found in the:				
a) Upgradient wells	___	X	___	___
b) Downgradient wells	___	X	___	___
If "Yes", Compliance Checklist A-2 must also be completed.				
12. Have records been kept of analyses for parameters establishing ground water quality and indicators of ground water contamination? 3745-65-94(A)(1)	___	X	___	___
13. Have records been kept of ground water surface elevations taken at the time of sampling for each well? 3745-65-94(A)(1)	___	X	___	___
14. Have the following been submitted to the Regional Administrator:3745-65-94(A)(2)				
a) Initial background concentrations of parameters listed in 3745-65-92(B) within 15 days after completing each quarterly analysis required during the first year?	___	X	___	___
b) For each well, any parameters whose concentrations or values have exceeded the maximum contaminant levels allowed in drinking water supplies?	___	X	___	___

	Yes	No	Unknown	Comments
c) Annual reports including:				
1) Concentrations or values of parameters used as indicators of ground water contamination for each well?	___	X	___	___
2) Results of the evaluation of ground water surface elevations?	___	X	___	___